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Applicant: Loher et al.
Application No.: 08/849,746**REMARKS**

The Action rejects all of the claims as obvious over different combinations of references. The Action rejects claims 1-4, 7, 11, 13, 14, and 28-31 as obvious over EP 0 373 294 in view of U.S. Patent Nos. 4,356,228 to Kobayashi et al. further in view of U.S. Patent No. 4,662,887 to Turner et al. The Action rejects claims 1-5, 7, 11-14, and 28-31 over JP 02-145327 in view of Kobayashi and further in view of U.S. Patent No. 5,156,588 to Marcune et al. The Action rejects other claims in 3 and 4 reference combinations.

I. JANUARY 16, 2007 INTERVIEW AND NEW CLAIM 32

The undersigned thanks the Examiner for the courtesy of the January 16, 2007 interview. During that interview, the Examiner reiterated his earlier rejections made before the Appeal.

On the issue of the patentability of claim 7, the Examiner clarified his earlier rejection. The Examiner acknowledges that claim 7 requires push-pull extrusion. His position is that EP 0 373 294 shows push-pull extrusion because it shows "pushing" material into a mold and "pulling" the formed article from the mold. These two steps, according to the Examiner, show push-pull extrusion.

The undersigned took issue with this, in particular pointing out that this reading of EP 0 373 294 to show "push-pull extrusion" is improper. The Examiner

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remained unconvinced.

In response to the Examiner's position, claim 4 remains unamended because EP 0 373 294 does *not* show push pull extrusion—the mere steps of pushing material into a mold and then removing a formed piece therefrom does not teach or suggest push-pull extrusion. Push-pull extrusion, as would be understood to a person of ordinary skill in the art, is a process in which a thermoplastic is pushed into a mold from a first injection unit, while a second such unit runs in reverse to “pull” the thermoplastic into and through the mold. Then the units both reverse, and the second unit pushes while the first pulls. This yields an extremely uniform part with little or no weld line.¹

As a further response to the Examiner's position, new claim 32 adds the step of “removing the shaped blank from the mold.” Thus, claim 32 affirmatively adds the step of removing the shaped blank from the mold—so the recited “push-pull extrusion” recited in claim 7 cannot include a step of removing the shaped blank from the mold and thus EP 0 373 294 does not teach or suggest that is recited in claim 32.

¹ See, for example, the descriptions of push-pull injection molding enclosed herewith. These are printouts from The Designer's Guide to Manufacturing, visited at <http://www.designinsite.dk/htmlsider/p2007.htm> (last visited May 31, 2005).

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Application No.: 08/849,746**II. REMAINING PRIOR ART-BASED REJECTIONS**

The remaining arguments below repeat and clarify arguments made in the 2004 Appeal Brief.

A. The Obviousness Combination

A combination of references is only proper when there is a suggestion to combine the references and a reasonable expectation of success in combining them. Neither criterion is met here. There is no suggestion within the references themselves for their combination.

The Action combined two groups of references to reject claims 1 and 2. For claim 1, the Action combined EP 0 373 294 in view of U.S. Patent Nos. 4,356,228 to Kobayashi et al. further in view of U.S. Patent No. 4,662,887 to Turner et al. For claim 2, the Action combined JP 02-145327 in view of Kobayashi and further in view of U.S. Patent No. 5,156,588 to Marcune et al.

The proposed combination of axially-pressure formed screw references (EP 0 373 294 and JP 02-145327) with a process of forming sheet material (Kobayashi) for use in medical devices (Turner and Marcune) is unwarranted. At best, the combination of all of these references is a tenuous weave of unrelated references; at worst, the references were cobbled together only after studying the pending claims, and using these claims as a blueprint for the rejections. In either case, the combination is improper.

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EP 0 373 294 discloses processes for forming airplane screws (Col. 1, lines 8-16.), which ignores the sterility and precision required in medical applications. JP 02-145327 describes a nylon resin and braided yarn reinforced screw that is formed in a mold and axially compressed by a punch. Kobayashi, in contrast, discloses several processes for extruding composite sheets for use in "press molding, compression molding, stamping molding," although Kobayashi admits that "method of molding the preheated sheet is not particularly critical in the present invention." Col. 5, lines 3-4 and 12-13. The mere inclusion of the medical device patents (Turner and Marcune) does not somehow knit together the disparate aircraft, screw, and sheet references into a proper combination.

Why? Because there is no suggestion to combine the aircraft, sheet-forming and medical arts, especially as one of ordinary skill in the art would recognize the shortcomings of using a sheet-forming process in forming precision medical screws. Sheet-forming, using an extrusion or press, would not be practical for use in forming a screw, with its fine threads and engagement surface, and thus would never be consulted to look up a suggested injection molding pressing head speed, as has been done in the Action. Action at page 7.

Further, one of ordinary skill in the art would be hard-pressed to look to the process of forming sheet material (Kobayashi) to yield any expectation of success in the art of screw and screw-thread formation. Since there is no suggestion to

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combine the references and no reasonable expectation of success in combining them, the combination is unwarranted and should be withdrawn, together with the accompanying rejections based thereon.

1. Claims 1-6, 8-14, 16, and 27-31 are patentable.

None of the references, alone or in combination, teach "pressing said heated blank into the negative mold using a pressing head that travels at a speed of 2mm/sec to 80 mm/sec." The Action relies on Kobayashi for this teaching, but Kobayashi teaches "closing molds" at 4 mm/sec, which has nothing whatsoever to do with the claimed "pressing head" of the present invention that is used in an injection molding type process to inject the pre-heated blank that is at a plastic flow consistency into a mold cavity. Kobayashi is directed to the compression molding art, would not be proper to consult for an injection molded part because compression molding and injection molding are so different.²

Therefore, the rejection of claims 1-6, 8-14, 16, and 27-31 is unwarranted.

2. Claim 7 is patentable.

The Action rejected claim 7, arguing that EP 0 373 294 and JP 02-145327 teach the claimed push-pull process. Neither reference, in fact, teaches this process. A push-pull process is one in which a thermoplastic is pushed into the mold from a

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first injection unit, while a second such unit runs in reverse to "pull" the thermoplastic into and through the mold. Then the units both reverse, and the second unit pushes while the first pulls. This yields an extremely uniform part with little or no weld line.³

As discussed in some detail above, the Action argues that EP 0 373 294 and JP 02-145327 show a push-pull process, they do not. EP 0 373 294 shows axially pressing a heated rod into a mold, but it does not teach the "pulling" required in a push-pull process. Similarly JP 02-145327 fails to disclose a "pulling" operation.

Therefore, the rejection of claim 7 is unwarranted.

² Compare the descriptions of compression and injection molding in the Modern Plastics Encyclopedia, 1994, enclosed.


³ See, for example, the descriptions of push-pull injection molding enclosed herewith. These are printouts from The Designer's Guide to Manufacturing, visited at <http://www.designinsite.dk/htmlsider/p2007.htm> (last visited May 31, 2005).

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In view of the foregoing amendments and remarks, applicants respectfully submit that the present application in condition for allowance, and a notice to that effect is respectfully requested.

Respectfully submitted,

Loher et al.

By 
Stephen B. Schott
Registration No. 51,294
(215) 568-6400

Volpe and Koenig, P.C.
United Plaza, Suite 1600
30 South 17th Street
Philadelphia, PA 19103

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